We claim:

1. A configuration for detecting defects on a substrate within a processing tool, comprising:

a loadport for loading or unloading the substrate to the processing tool;

a device transfer area within the processing tool;

a robot handling area connected to said load port and communicating with said device transfer area through an input slot;

at least one processing chamber formed in the processing tool;

a robot arm configured to transfer substrates between the load port, said robot handling area, and said at least one processing chamber;

an optical sensor with an illumination system mounted within said device transfer area above said input slot, for recording an image of a respective substrate being held by said robot arm in said device transfer area; and

a control unit connected to said optical sensor for recording the image taken with said optical sensor, and for comparing images taken by said optical sensor.

2. The configuration according to claim 1, wherein said optical sensor is a sensor configured for performing a macro-defect inspection.

3. The configuration according to claim 1, wherein said optical sensor has a minimum resolvable structure width of more than 10 µm and of less than 100 µm.

4. The configuration according to claim 1, wherein:

said optical sensor is a scanner recording images in columns from said substrate during a movement of said substrate effected by said robot arm;

said control unit is connected to a motor moving said robot arm for obtaining the substrate position during the movement; and

said control unit includes a processing unit for building an image from the image columns and the substrate positions.

5. The configuration according to claim 1, wherein said optical sensor includes a focusing means connected to said control unit for focusing said optical sensor to a distance according to a height of a transfer path of said substrate.

6. The configuration according to claim 1, wherein:

the substrate is a reticle or a mask;

said loadport is connected to a reticle library;

said processing tool is an exposure tool; and

said optical sensor is a CCD-camera.

7. The configuration according to claim 1, wherein the substrate is a semiconductor wafer and said loadport is configured to receive a wafer carrier.

8. A method for detecting defects on a mask or reticle within an exposure tool having a reticle library, a device transfer area, an optical sensor, and an illumination system for illuminating an area monitored by the optical sensor, the method which comprises:

transferring a reticle from the reticle library to the device transfer area;

recording an image of the mask or reticle with the optical sensor to generate a recorded image;

comparing the recorded image with a reference image;

issuing a signal in response to the comparison; and

transferring the mask or reticle to the exposure tool and exposing a semiconductor wafer using the mask or reticle in response to the signal.

9. A method for detecting defects on a semiconductor device within a processing tool, the processing tool including a device transfer area, an optical sensor, and an illumination system for illuminating an area monitored by the optical sensor, the method which comprises:

providing the semiconductor device to the device transfer area;

recording a first image of the semiconductor device using the optical sensor;

transferring the semiconductor device to the processing tool;

performing a process step on the semiconductor device;

transferring the semiconductor device back to the device transfer area;

recording a second image of the semiconductor device using the optical sensor;

comparing the first image with the second image; and

issuing a signal in response to the comparison.

10. The method according to claim 9, wherein the comparing step comprises:

subtracting one of the images from the other one of the images to generate a subtracted image;

identifying a pattern in the subtracted image; and

comparing the pattern with at least one reference pattern.

11. The method according to claim 10, wherein the at least one reference pattern is a pattern representing a defect on a semiconductor device.

12. The method according to claim 9, wherein the defect is at least one of:

a particle on a device backside causing a focus spot;

a particle on a device frontside causing distortions during resist spin-on; and

a particle on a device frontside causing resist lift-off.

13. The method according to claim 9, which comprises recording the first and second images by scanning the

semiconductor device during a movement of the semiconductor device across the device transfer area.

14. The method according to claim 9, which comprises stopping a processing of the inspected semiconductor device in response to the signal.

15. A method for detecting defects on a robot arm in a processing tool, the processing tool including a device transfer area, an optical sensor, and an illumination system, and the robot arm is configured to transfer a substrate to the device transfer area, and the method which comprises:

moving the robot arm to the device transfer area without being loaded with a substrate;

recording a first image of the robot arm in the device transfer area;

transferring a number of substrates to and from the device transfer area with the robot arm;

moving the robot arm to the device transfer area without being loaded with a substrate;

recording a second image of the robot arm in the device transfer area;

comparing the first image and the second image; and

issuing a signal in response to the comparison.

16. A method for detecting a substrate identification number patterned on a surface of a substrate in a processing tool, the processing tool including a device transfer area, an optical sensor, and an illumination system, and the method which comprises:

delivering the substrate to the device transfer area;

recording an image of the substrate;

identifying the identification number by way of a pattern recognition algorithm; and

issuing a signal in response to the identification.